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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,363	11/07/2001	Jamelyn D. Holladay	13020G	4377

7590 10/14/2005

Intellectual Property Services
Battelle Memorial Institute
Pacific Northwest Division
P.O. Box 999
Richland, WA 99352

EXAMINER

COCKS, JOSIAH C

ART UNIT	PAPER NUMBER
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3749

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,363

Applicant(s)

HOLLADAY ET AL.

Examiner

Josiah Cocks

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 16-23 and 63-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 16-23, 63-94, 96, 97, 99 and 100 is/are allowed.
- 6) ☒ Claim(s) 81-87, 95 and 98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date various.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Receipt of applicant's amendment filed 7/25/2005 is acknowledged.

Drawings

2. Review of the drawings filed 11/07/2001 reveals that these drawings include lines numbers that are not uniformly thick and well defined. See 37 CFR 1.84(l). Further, the numbers and reference characters are handwritten and in some cases are not plain and legible. See 37 CFR 1.84(p). Accordingly, corrected drawings are required.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

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A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Information Disclosure Statement

3. The information disclosure statements filed 2/11/02, 4/23/2004 and 7/25/2005 are acknowledged and the information contained therein considered. Initialed and signed copies of these information disclosure statements are included with this Office Action.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 95 and 98 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Both of claims 95 and 98 refer to "the catalyst in the reformation channel," however, both of these claims are dependent upon claim 85, which does not introduce a catalyst in the

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reformation channel nor does any claim upon which claim 85 is dependent introduce such a catalyst. It appears applicant intended to make these dependent upon claim 18, which introduces such a catalyst. Examination on the merits has been performed based on this apparent desired dependency. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 81-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/00186 (“186 patent”) (previously cited) in view of U.S. Patent No. 4,876,162 to McElroy (“McElroy”) (previously cited).

The '186 patent discloses in Figures 1-6 a microcombustor and steam reformer substantially as described in applicant's claim 81-87. In particular, in Figure 2 a first section comprising a combustion fuel channel with inlet (104) and outlet (106), and a second section next to the first section and including a combustion chamber (108) with an inlet in communication with an outlet (112) that is capable of evacuating combustion exhaust products. The combustion fuel channel and the exhaust channel are disposed on a same side with respect to the combustion chamber, so as to form a first heat exchanger, and are in parallel planes (see Fig. 2a, col. 3, lines 18-42, and col. 3, line 62 through col. 4, line 16). The '186 patent also discloses that a catalyst (300) may be included in the combustion chamber (see col. 4, line 63 through col. 5, line 23). The microcombustor is disclosed as being used with a fuel reformer (410) and a fuel cell (402) (see col. 5, lines 24-41) and may include a working fluid/reformer fuel inlet (120) and multiple heat exchange chambers with multiple heat transfer layers (see Figs. 2c and 2d). The '186 patent further shows in Figure 3a a first plate (111) separating the first and second sections and a second plate (unnumbered) located between the combustion chamber (108) and the catalyst (300).

The '186 patent discloses all the limitations of claims 81-87 except for a liquid evacuation system that comprises a wick. In the '186 patent it is understood that water is a product of combustion that forms in an exhaust channel (see at least page 10, lines 3-6) and proposes that water is vaporized (see at least page 12, lines 29-34). This teaching water vaporization is possibly not regarded as a liquid evacuation system as claimed, particularly one comprising a wick.

McElroy teaches a fuel cell in the same field of endeavor as the '186 patent. In McElroy, the fuel cell includes a water removal system that includes the use of a wick structure/capillary tube (26) located in an exhaust channel/manifold (20).

Therefore, in regard to claims 81-87, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the microcombustor of the '186 patent to incorporate the wick of Sanderson as for the desirable purpose of removing excess water from a fuel cell system (see McElroy, col. 2, lines 40-48).

Allowable Subject Matter

9. Claims 1-9, 16-23, 63-80, 88-94, 96, 97, 9, and 100 are allowable.

10. Claims 95 and 98 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:
The prior art does not teach or suggest the microcombustor having the structure recited in applicant's 1 including a space that separates the combustion catalyst and the second plate that is of sufficient size to allow for fluid expansion and flow to the exhaust channel.

Response to Arguments

12. Applicant's arguments filed 7/25/2005 with respect to claims 81-87 have been fully considered but they are not persuasive. Applicant argues that the wick liquid evacuation system of McElroy is not combinable with the '186 patent because the wicks/conduits in McElroy are intended to allow only the passage of liquid and not gas. Applicant therefore reasons that such an evacuation system would not function in the apparatus of the '186 patent because exhaust gases generated in the combustion chamber would be unable to escape.

In response the examiner notes that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case the examiner considers that the combination of references would suggest to a person of ordinary skill in the art a microcombustor having a wick liquid evacuation system that removes undesirable liquid from the exhaust channel. That the wick itself does not allow for the passage of gas would also be desirable in the microcombustor of the '186 patent as the escape of gas is provided for via the remainder of the exhaust channel. The combination would suggest to a person of ordinary skill in the art a microcombustor having an exhaust channel that allows for the escape of combustion products and for a liquid evacuation system that allow for only evacuation of liquid/water formed in the exhaust channel through the specific wick/conduit structure.

Accordingly, applicant's claims 81-87 are not considered to patentably define over the prior art of record.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Josiah Cocks whose telephone number is (571) 272-4874. The examiner can normally be reached on weekdays from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at (571) 272-4828. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair>. Any questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

jcc

October 6, 2005



JOSIAH COCKS
PRIMARY EXAMINER
ART UNIT 3749